SOUTHERN CALIFORNIA EDISON
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California Energy Commission
Docket Office, MS-4
Re: Docket No. 14-IEP-1B
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Re: *Southern California Edison Company's Comments on the California Energy Commission Docket No. 14-IEP-1B: Lead Commission Workshop on Measuring the Success of ARFVTP*

Dear Commissioner Scott:

On June 12, 2014, the California Energy Commission (Energy Commission) held a Lead Commissioner Workshop on Measuring the Success of the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) ("the Workshop") as part of the 2014 Integrated Energy Policy Report Update (2014 IEPR Update) process. Southern California Edison (SCE) participated in the Workshop and appreciates the opportunity to provide these written comments.

The primary focuses of SCE's comments are twofold. First, SCE recommends that the Energy Commission develop comprehensive policy and project metrics that will most accurately assess the quantitative and qualitative value of investments in the ARFTVP. These metrics should take into account the long-term nature of ARFTVP's goals for addressing climate change and improving air quality and the environment. Second, SCE encourages the Energy Commission to utilize existing technologies and infrastructure when practicable to ensure that investments in new infrastructure are spent wisely. In addition, SCE's comments also address the need for greater inter-agency collaboration, the appropriate length of government involvement, the need for a long-term plan for heavy duty and non-road research, development and demonstrations (RD&D), and the Governor's Zero-Emission Vehicle (ZEV) Action Plan.

A. Valuation Metrics

1. Policy and Project Metrics

SCE recommends using two sets of metrics for assessing ARFTVP success: (1) policy metrics for determining the funding levels for categories within the ARFVTP investment plan; and (2) project metrics for determining funding of individual projects within each of the categories. Policy and project metrics will be critically important for valuing the benefits of technologies and programs, guiding funding and decision-making in the ARFVTP. Policy

metrics provide structure to the investment plan categories, while project metrics facilitate the ranking of competing projects within the set categories.

With specific respect to policy metrics, SCE agrees with UC Davis's representative's – Mr. Anthony Eggert's – opinion that the Energy Commission's priority should be to first establish a set of "policy metrics" to support specific policy goals and milestones that it aims to achieve through ARFTVP. Once those policy metrics are clearly defined, the Energy Commission should then establish separate criteria as "project metrics" to guide its investments in the ARFTVP.

Because the purpose of the ARFVTP is to "transform the state's fuel and vehicle types to help attain climate change policies with an emphasis on developing and deploying technology and alternative and renewable fuels,"[1] both policy and project metrics should use comprehensive criteria that include the eleven preferences for ARFVTP projects set forth in California Health and Safety Code Section 44272 (c)[2]. ARFVTP funding categories[3] include, but are not limited to, vehicle incremental cost (deployment), infrastructure, RD&D, market education, outreach and stakeholder groups, analytic assessments, fuel production, jobs training, removing of barriers (includes developing codes and standards).

As noted in Mr. Eggert's presentation, each of these ARFVTP categories are critical to the commercialization of alternative fuel technology and should be funded even if the metrics are challenging to assess or are only qualitative in nature. For instance, certain categories like outreach and education may not easily lend themselves to quantitative measurement and thus should rely more on qualitative metrics. As several workshop presenters observed, determining the amount of funding for some of these categories requires a value judgment based on many factors including market realities. For example, many parties in past IEPR workshops and other agencies' workshops have noted the obvious common sense value of well-funded market education, outreach and stakeholder groups, despite the fact that the value is not easily quantified. In a prior comment letter, SCE recommended that such funding to be increased to $10 million per year.[4] RD&D funding is similarly important to the development of emerging technologies.

2. Quantitative and Qualitative Metrics

During the Workshop, Commissioner Scott noted the importance of incorporating both qualitative and quantitative attributes into measurements and metrics. SCE agrees and proposes

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1 Cal. Health & Safety Code § 44272(a). Hereinafter, unless otherwise noted, all statutory code section references are to the California Health and Safety Code.

2 Examples of Health & Safety Code § 44272(c) preferences include consideration of reductions in greenhouse gas emissions, air pollution, water pollution, non-state cost sharing, and impact on natural resources.

3 Health & Safety Code § 44272(e)

4 *See* SCE's April, 24, 2014 IEPR Comments on Transportation Over the Next 10 Years at p.3 available at: http://www.energy.ca.gov/2014_energypolicy/documents/2014-04-10_workshop/comments/Southern_California_Edison_Comments_2014-04-24_TN-72967.pdf

that the Energy Commission primarily rely on quantitative metrics with the recognition that not categories are susceptible to quantification and thus should be assessed qualitatively. SCE also recommends that the Energy Commission use a scoring system similar to the model presented by Mr. Tom Cackette[5] that assigns different weights to various qualitative and quantitative categories.

As noted above, the primary focus for the ARFTVP should be on quantitative comparison of alternative fuel vehicles because most of the policy goals and preferences in Section 44272 can, and should, be quantified. The Legislative purpose of Assembly Bill 8 / Section 44272 is develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies. This goal lends itself to several quantifiable metrics, such as (1) reductions in air pollutants, water pollutants and air toxics, (2) avoiding adverse impacts on sustainability of natural resources, and provision of non-state matching funds.

In order to most effectively achieve the statutory goal and to determine long term funding categories for different low carbon alternative fuel categories within the ARFTVP , the Energy Commission should employ comprehensive metrics, like those endorsed by Mr. Jeff Rosenfeld of ICF, that assess all environmental pollutants simultaneously and fairly rank and reward technologies by their overall cleanliness, *i.e.*, their ability to reduce the amount of harmful pollutants attributed to the transportation sector, as well as other quantifiable benefits.[6] The benefit of a comprehensive approach, as opposed to selecting one or two metrics for evaluating ARFTVP success, will be more appropriate funding of the cleanest, zero-emission technologies that are typically not funded at the appropriate levels, if at all.

SCE agrees with the implications of Mr. Rosenfeld's presentation that it is not enough to be "fuel neutral" or use a performance metric (or standard), because when all the costs and benefits are held equal, selecting a metric selects the winning technology. As a result agencies should be very careful in selecting policy and project metrics. As goals for different agency programs have evolved over time, California has developed many different grant programs that, due to their particular and often narrow metrics, are making different cost-effective funding decisions that are not necessarily aligned with one another. As a result, the private sector may experience frequent, drastic fund-shifting from one favored fuel to another over the course of decades, which may result in stranded infrastructure and/or technology. A more thoughtful,

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5 *See* Tom Cakette, June 12, 2014 Presentation *Metrics for Selecting and Evaluating ARFVTP Projects* available at: http://www.energy.ca.gov/2014_energypolicy/documents/2014-06-12_workshop/presentations/12_Tom_Cackette_Metrics_for_Selecting_and_Evaluating_ARFVTP_Projects.pdf

6 *See* Jeff Rosenfeld, ICF, June 12, 2014 2014 IEPR Update Workshop: Transportation – Benefits/Metrics, *The Benefit-Cost Ratio* available at: http://www.energy.ca.gov/2014_energypolicy/documents/2014-06-12_workshop/presentations/10_Rosenfeld_CEC_IEPR_Workshop-Transportation_Metrics.pdf Other quantifiable benefits include the fuel cost savings and the societal benefits of petroleum reduction presented by Mr. Rosenfeld.

long-term and comprehensive approach to metrics is needed to minimize this possibility and effectively and fairly spend agency funds.

B. Utilization of Existing Technologies and Infrastructure When Practicable

Although not an issue addressed at the Workshop, the "chicken or the egg" dilemma of whether alternative fuel vehicles or the infrastructure needed to support those vehicles should come first is worthy of the Energy Commission's and stakeholders' attention. For the last thirty years, this issue has created a barrier to the commercialization of alternative fuel technology. To eliminate this barrier, it is important to first focus on solutions that utilize existing infrastructure and then to cautiously explore funding for new infrastructure to support alternative fuel vehicles. This approach has statutory support in Section 44272 (c)(8), which expresses a preference for alternative fuel vehicles that can rely on existing technologies and infrastructure to perform.

Today, many alternative fuel vehicles are able to utilize existing infrastructure. Examples of vehicles that rely on existing technologies include battery electric vehicles (EVs) and plug-in hybrid EVs that use home charging or fleet charging, natural gas vehicles that use home refueling, and blended or drop-in fuels that can utilize existing gasoline or diesel stations without changes to the stations. The metrics described above should give greater valuation to such technologies.

C. Inter-Agency Collaboration

For the reasons discussed more fully below, greater inter-agency collaboration on assessment studies is necessary to determine the appropriate project and policy valuation metrics, the appropriate balance of funding categories for different alternative fuels within ARFVTP, and to achieve a better understanding of the long term needs, costs, benefits, and trade-offs for low carbon alternative fuel transportation. Greater inter-agency collaboration will also help inform which tactics should be employed (e.g., grants, loans, loan guarantees) and the appropriate balance between funding vehicle deployment, infrastructure, RD&D, market education and other required ARFVTP funding categories.

Careful planning, metrics and assessments are needed for California to achieve its climate change and air quality goals and avoid costly side effects, such as stranding assets or building too many competing alternative fuel infrastructures. In creating a pathway to 2050, the ARFVTP should focus on the long-term by prioritizing investment in very low carbon technologies, or ones that help develop a thoughtful transition to very low carbon technologies while also meeting other important state goals. Investing in short-term technological solutions that do not yield substantial long-term value in greenhouse gas reduction should be avoided.

The ARFVTP long-term plan should also consider the need to fund programs for transportation sectors beyond the light duty vehicle sector, such as trains, goods movement and non-road equipment. Assessments to determine the correct funding balance between transportation sectors are likely needed.

To those ends, SCE recommends expanded agency coordination for funding technology and assessment studies on costs, benefits, impacts, and tradeoffs of low carbon alternative fuel vehicles to make category decisions based on sound comprehensive policy metrics for both the annual ARFVTP investment plan, as well as a yet-to-be-developed long-term vision / investment plan for achieving the 2050 greenhouse gas reduction goals, the national ambient air quality standards, and other Section 44272 (c) considerations.

The recent Vision for Clean Air study, prepared by the California Air Resources Board (CARB), South Coast Air Quality Management District (AQMD) and San Joaquin AQMD[7] is a good first step and commendable example of interagency coordination and funding. This study is one of the few times where upstream emission impacts for all of the alternative fuels[8] and reductions in criteria air pollutants and greenhouse gases were considered. SCE continues to offer our assistance in this type of study including the impacts on the electric grid.

Another area that would benefit from interagency collaboration includes the determine the costs, benefits, trade-offs and issues in a transportation segment (such as heavy duty vehicles) of competing very low carbon alternative fuels and infrastructures including hydrogen, biogas, liquid biofuels and electricity; and then to look closely at all the options with each fuel, such as battery electric trucks, plug-in hybrid trucks, dual mode battery electric trucks powered by wayside power, dual mode plug-in hybrid electric trucks powered by wayside power and shifting modes to electric or biogas rail.[9]

D. The Appropriate Length of Government Involvement

During the Workshop, Commissioner Scott asked when the government funding to support the commercialization of low carbon alternative fuels should end. Meeting California's 2050 greenhouse gas reduction goals is an important, complex and massive undertaking. No alternative fuel has reached one million units after forty years of effort since the 1973 oil crisis. The government should therefore be prepared to support this market for the long term. Assessment studies can be helpful in determining whether there are a sufficient number of low carbon alternative fuel vehicles in each transportation sector in 2020 and 2030 to keep the state on track to meet its 2050 greenhouse gas reduction goals for the transportation sector. The federal government's plan to provide tax credits for approximately four-to-six million PEVs may help expedite the state's departure from supporting the market.

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7 *See*: Vision for Clean Air: A Framework for Air Quality and Climate Planning, available at: http://www.arb.ca.gov/planning/vision/vision.htm

8 "Well to gas tank" or "well-to-plug" emissions are considered upstream emissions. "Tank-to-wheels" emissions are considered downstream.

9 There are several competing fuels for use in a plug-in hybrid engine including biogas, biofuel, hydrogen, and diesel. There are several competing types of wayside power including overhead wires, inductive roadway power, and conductive roadway power. There are several types of electric rail too.

E. Long-Term Planning for RD&D

SCE recommends that the Energy Commission conduct a "deep dive" on long-term planning for heavy duty and non-road RD&D. RD&D has not received much discussion in the IEPR Transportation workshop series, which may be appropriate for light duty vehicles.[10] By contrast, however, a need remains for the ARFVTP, in cooperation with other agencies, to fund RD&D for medium-duty, heavy duty and non-road transportation. For instance, to make the detailed comparisons of long-term very low carbon technologies (e.g., electricity, hydrogen, biogas, and liquid biofuels), more data from actual demonstrations is needed. For the Interstate 710 near-zero and zero-emission truck corridor project alone, there are several types of electric technologies as well as biogas, biofuel and hydrogen options each with their own infrastructure issues and costs. Another appropriate RD&D is to assess lower cost solutions for both alternative fuel vehicles and alternative fuel infrastructure.

F. Governor's ZEV Action Plan.

SCE commends the ARFVTP effort to fund tasks assigned to other agencies in the Governor's ZEV Action Plan, such as the California Independent System Operator's task to develop a vehicle-grid-integration roadmap. Agency resources will be taxed by the ZEV Action Plan's more than 100 actions, and potentially dozens more following the 2014 update. The ARFVTP should therefore expand its funding for these other agency efforts and any remaining ZEV action items assigned to the Energy Commission. For example, Energy Commission's funding for stakeholder engagement forums like the two recent IEPR workshops that brought together stakeholders from the PEV dealership industry and the used car battery industry are very important and should be continued.

SCE also recommends that the Energy Commission devote additional ARFVTP funding to these types of efforts so that all interested stakeholders are engaged. The Energy Commission should leverage the assistance of the broader stakeholder community, including other agencies, the private sector and the non-profit sector, to promote active stakeholder engagement, transportation industry consensus, and a greater likelihood of accomplishing its goals.

In conclusion, SCE appreciates the Energy Commission's consideration of these comments and looks forward to its continuing collaboration with the Energy Commission. Please do not hesitate to contact me at (916) 441-2369 with any questions or concerns you may have. I am available to discuss these matters further at your convenience.

Very truly yours,

/s/ Manuel Alvarez

Manuel Alvarez

[10] Some RD&D for technologies such as wireless charging or storage at DC fast charge stations may still be appropriate for public funding.